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PRIMER

ENERGY, MINING AND SUSTAINABILITY IN NW BRITISH COLUMBIA • FEBRUARY 2008

Sustainable Energy Solutions

Sizing It Up

Scenarios for Powering Northwest British Columbia

Northwest British Columbia is at a turning point. A mining boom is underway, and there is pressure to find ways to power up new mining projects. Options for providing more power to the region include the Northwest Transmission Line, a 287-kilovolt (kV) power line that would run along Highway 37; a smaller, 138-kV transmission line; or development of regional renewable energy resources.

Each option would have impacts far beyond the mere presence – or absence – of transmission wires. By determining how much power is available for communities, and how much is available to industry, transmission infrastructure could predetermine the pace, scale and nature of development in the region for decades to come. In particular, the 287-kV Northwest Transmission Line, the option favoured by the British Columbia government, could be a significant driver for new mining development. Communities should consider the proposal carefully because it could dramatically alter the region's future.

A 287-kV transmission line from Kemano to Kitimat in British Columbia.

PHOTO: GREG BROWN, THE PEMBINA INSTITUTE

Sizing Up Highway 37 Transmission Scenarios

Issue	Regional Energy Self-Sufficiency Using Renewable Sources	138-kV Transmission Line (along with the Forest Kerr Run-of-River Hydro Project)	287-kV Northwest Transmission Line
	(see Figure 4 on page 7)	*(see Figure 3 on page 6)*	*(see Figure 2 on page 5)*
Power Capacity	Enough potential to meet local industry and community needs. Responsibility for industrial power borne by companies.	Sufficient power for one major mine, roughly equivalent in size to the Galore Creek Mine.[1] Regional energy projects needed for additional power.	Sufficient power for at least five major mines, and potentially more. Regional energy projects could tie into the line.
Jobs	Long-term local jobs in renewable power generation, as well as jobs in mining at a pace and scale consistent with local power potential.	About 500 jobs in a mine the size of Galore Creek. More jobs likely over time through additional mines and local power projects.	About 3,700 short-term construction jobs and over 2,000 medium-term mine operation jobs if the five currently proposed mines proceed.
Effects on Communities	Communities develop – and potentially own – renewable power generation projects. Mining developments proceed at a measured pace, allowing for advanced planning to minimize negative social impacts and maximize benefits.	Communities remain on diesel power, without grid access in the foreseeable future. Mining developments proceed with one mine initially; overall, a less dramatic pace than with the 287-kV transmission line.	Communities remain on diesel power, without grid access in the foreseeable future. Mining developments proceed rapidly, likely creating heavy social pressures on communities.
Effects on Water, Land and Wildlife	Impacts on rivers if hydropower sources are not developed to best standards. Improved opportunities for long-term planning in the region. Mine activity proceeds at a more measured pace; intensity of short-term impacts reduced.	About 20 kilometres of right-of-way cleared north of Meziadin Junction. No transmission line construction required south of Meziadin Junction. Improved opportunities for long-term planning for development in the region. Mine activity proceeds at a more measured pace; intensity of short-term impacts reduced.	Over 300 kilometres of additional right-of-way from Terrace to Bob Quinn Lake cleared, opening new access corridors for hunting and recreation. Significant cumulative environmental impacts, affecting four major watersheds from multiple mines built in the same time frame.
Climate Change Impacts	Greenhouse gas emissions reduced as communities switch from polluting diesel generators to renewable sources. Industrial development proceeds with fairly minimal energy-related emissions.	Greenhouse gas emissions from mining increase at a more measured pace in the short term.	Rapid mining development increases regional greenhouse gas emissions by up to 1,200%.

1 The Galore Creek Mine contains one of the most valuable copper and gold deposits in North America. Construction on the mine began in 2007, but was halted due to rising costs. The project partners, NovaGold and Tech Cominco, plan to initiate a comprehensive review to evaluate alternative development strategies.

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More Than One Way to Power the Region

- Mining companies have applied for permits to build several new mines in Northwest British Columbia, and many more exploration projects are underway.
- To facilitate new mine development, some companies are calling for an extension of the power grid up Highway 37. As proposed, the 287-kV Northwest Transmission Line would indeed open the door to multiple mines, but would not provide power to local, diesel-dependent communities, such as Iskut and Telegraph Creek.
- The company behind one of the region's proposed mines, Galore Creek, was to contribute $158 million to building the Northwest Transmission Line. However, construction on Galore Creek was suspended in 2007, temporarily halting the power line project as well. The break gives government and local communities an important opportunity to re-evaluate the 287-kV line in the context of other scenarios for powering the Northwest.
- One alternative is to combine a 138-kV power line with a run-of-river hydro project at Forest Kerr. This system was the British Columbia government's initial choice and could produce enough energy to power one major mine.
- Northwest British Columbia also has significant renewable energy resources, including hydro and wind, that could supply enough clean energy for local communities and some new industrial projects.
- The Pembina Institute has evaluated the 287-kV power line as well as a 138-kV line scenario and a renewables-based scenario to help inform a public dialogue about energy options for the region.

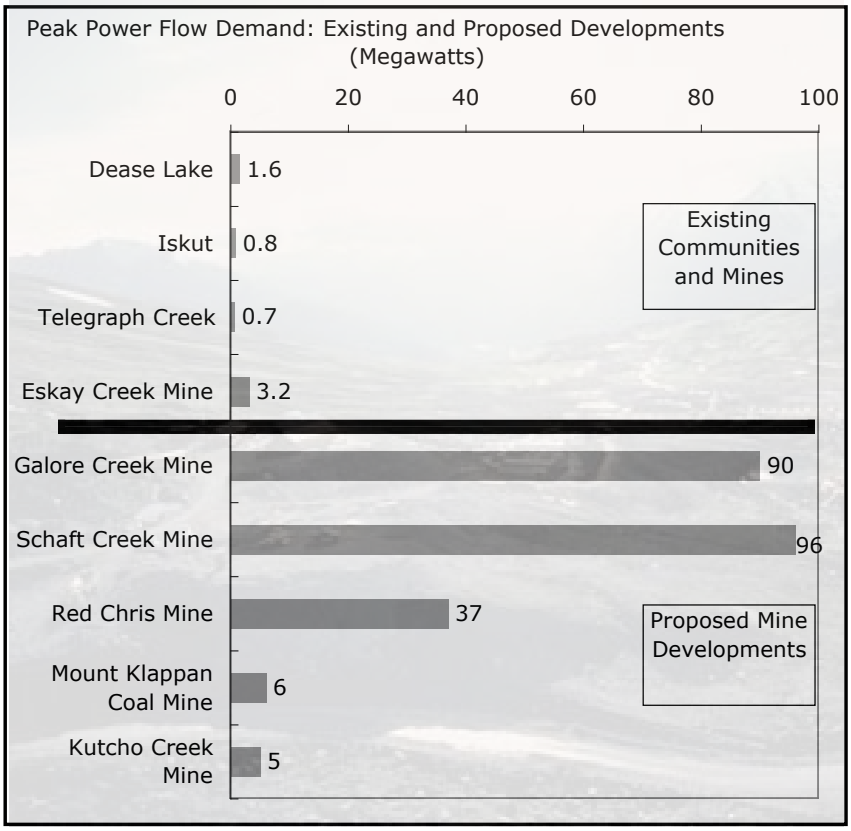

Figure 1: Peak power demand from existing communities and mines and from proposed mine developments. The Galore Creek Mine would require 112 times more power than the community of Iskut presently uses. Mining comprises 97% of the demand for power in the region. SOURCE: FOR DETAILED SOURCE DATA, SEE SIZING IT UP FULL REPORT, PAGE 11

Who Needs the Power?

Peak power demand projections show that proposed mines account for more than 97% of the demand for the Northwest Transmission Line. Figure 1 compares the energy needs of existing communities and the Eskay Creek Mine with that of the five main mines proposed for the region (see Figure 5 on page 8). The Northwest Transmission Line as proposed would not provide power to local diesel-dependent communities, such as Iskut and Telegraph Creek.

Fish, Wildlife, Communities and Culture

Highway 37, which connects Kitwanga to Watson Lake in the Yukon, is virtually the only road that travels through Northwest British Columbia. It is a pristine place with stunning scenery and diverse and abundant wildlife, encompassing the traditional territories of several First Nations. The area contains globally significant wilderness, including the headwaters of four major wild salmon ecosystems: the Taku, Nass, Stikine and Skeena, the latter three known also as "the Sacred Headwaters."

Northwestern British Columbia contains four major wild salmon ecosystems.

The three main communities in the region are those of the Tahltan people, who have a long history on the land: Iskut, which has a population of about 350 people; Dease Lake, which has a population of 700 people; and further west down the Stikine River, Telegraph Creek, which has a population of 450.

Power supply choices made today will greatly impact the future of Northwest British Columbia, shaping cultures and communities and altering landscapes. The Northwest Transmission Line would likely encourage rapid industrial development. If several new mines are built over the next few years, it would create employment and contract opportunities, and potentially increase community revenue.

However, such rapid development could also have harmful environmental and social impacts. For example, the population of Iskut, Dease Lake and Telegraph Creek currently amounts to 1,500 people. If the five proposed mining projects go forward, there would be more than 3,700 construction jobs and 2,000 permanent jobs in the region, leading to a huge influx of new residents and the potential for social problems (see "The Downside of Booms," right). By moderating the pace and scale of development, residents stand to benefit more and risk less.

By managing the pace of development, communities can maximize the long-term benefits of development. PHOTO: GARY FIEGEHEN

Relying on Renewable

Power from local – and potentially community-owned – renewable sources could provide enough energy for communities and some new development along Highway 37. Northwest British Columbia boasts significant hydropower resources, from small micro-hydro to larger run-of-river projects. The Iskut/Stikine region also contains promising wind resources, energy that can be combined with hydropower or diesel generators to provide a consistent source of power.

Before the Gold Rush

Before a final decision is made on the Northwest Transmission Line or any other power option, careful consideration is needed to ensure development is well planned, economic benefits are shared, and social and environmental costs are minimized. Important questions to consider include:

- What will the region's landscape look like in 20 years?

The Downside of Booms

Rapid industrial development often puts pressure on communities. If the multiple mines proposed for Northwest British Columbia proceed, impacts on local communities could include:

- **increased social problems, including increased access to drugs and alcohol**
- **loss of connection with traditional cultural activities, either through a reduction in the value placed on these activities or through the degradation of the natural environment**
- **an increase in transitional living arrangements, with workers and families moving to the region temporarily, but not settling**
- **an increasing gap between the "haves" (miners and mining service suppliers) and "have-nots" (traditional harvesters, community based workers, unemployed, elderly)**
- **pressures on families from increased "long-distance commuting" (also called "fly-in, fly-out" commuting), usually with a two-week in, two-week out schedule [2]**

2 Visit www.afterthegoldrush.ca for our primer on labour and employment issues associated with the proposed mining activity.

Increased truck traffic on Highway 37 from extensive new development could strain regional road infrastructure.
PHOTO: PROTECT OUR PORTS COMMITTEE

Truck Traffic: An Accident Waiting to Happen?

Increased mining activity would mean much more truck traffic on Highway 37. If five currently proposed mines proceed, truck traffic on Highway 37 to the port of Stewart would rise to 640 trucks per day.[3] That works out to a truck passing Meziadin Junction every three minutes. Combined with existing logging truck traffic, this increase could strain Highway 37 infrastructure and have a real impact on road safety.

- Will there still be healthy, abundant salmon in the rivers and wildlife on the land?
- What jobs and economic opportunities will be available when the mining rush is over?
- How will a rapid increase in population affect local cultures and communities?

Given the significant ramifications of a 287-kV power line, the Pembina Institute recommends that the British Columbia government re-evaluate the Northwest Transmission Line proposal in the context of a comprehensive analysis of all the options for providing power to Northwest British Columbia.

Environmental Impacts of Development

The cumulative environmental impacts of a new transmission line and related development could include:

- acid mine drainage, generated by waste rock from mines, that pollutes water and harms aquatic life
- toxic mine tailings that can contaminate soil and water for decades
- road construction that disturbs hundreds of kilometres of wilderness
- greatly increased greenhouse gas emissions

Acid mine drainage is one of the biggest environmental challenges for the mining industry.
PHOTO: CARRI SLANINA, CENTRE FOR SCIENCE IN PUBLIC PARTICIPATION

Want More Information?

For more information on power options for Northwest British Columbia, download our full report entitled *Sizing It Up: Scenarios for Powering Northwest British Columbia* at:

www.afterthegoldrush.ca

To learn more about the potential impacts of new mine development in Northwest British Columbia, check out our *After the Gold Rush* series of reports, primers, photos and other information available at:

www.afterthegoldrush.ca

This report was prepared by Karen Campbell and Greg Brown of The Pembina Institute:

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3 *Sizing It Up* full report, 6. Data from: Mount Klappan Coal = 100 trucks. Source: Fortune Minerals Limited, "Mount Klappan Anthracite Coal Project," presentation at Minerals North 2007, Terrace B.C., April 18, 2007). Galore Creek = 70 trucks. Source: Environmental Assessment Office, Transport Canada, Fisheries and Oceans Canada, Natural Resources Canada, Environment Canada, *Galore Creek Copper-Gold-Silver Project: Assessment Report/Comprehensive Study Report*, February 2007, 52. Shaft Creek = 75 trucks. Estimated using the ratio of truck per day versus rate of production for Galore Creek. Schaft Creek rate of production (70,000 tpd) taken from EA project description. Red Chris = 14 trucks. Source: Environmental Assessment Office, *Red Chris Porphyry Copper-Gold Project Assessment Report*, July 2005, pg 80. Kutcho Creek = 10 trucks. Source: Knight Piesold Ltd., *Western Keltic Mines Inc. Kutcho Creek – Project Description Report*, July 2006, 11.

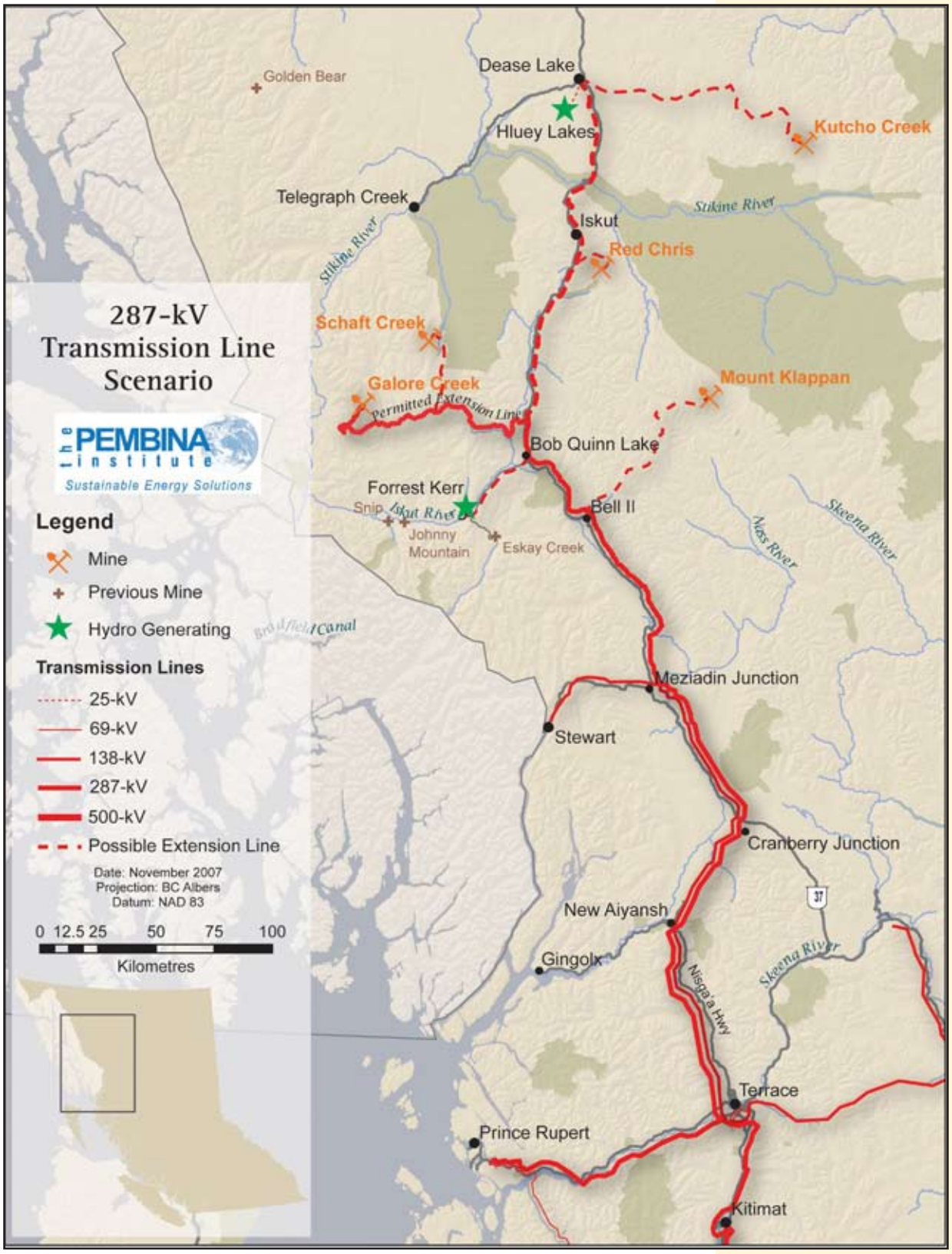

Figure 2
287-kV Transmission Line Scenario

This map shows the 287-kV transmission line proposal (the solid red lines) and one scenario of possible mines and connections (in red dashed lines). Please note there are no plans in the proposal to connect this line to Iskut.

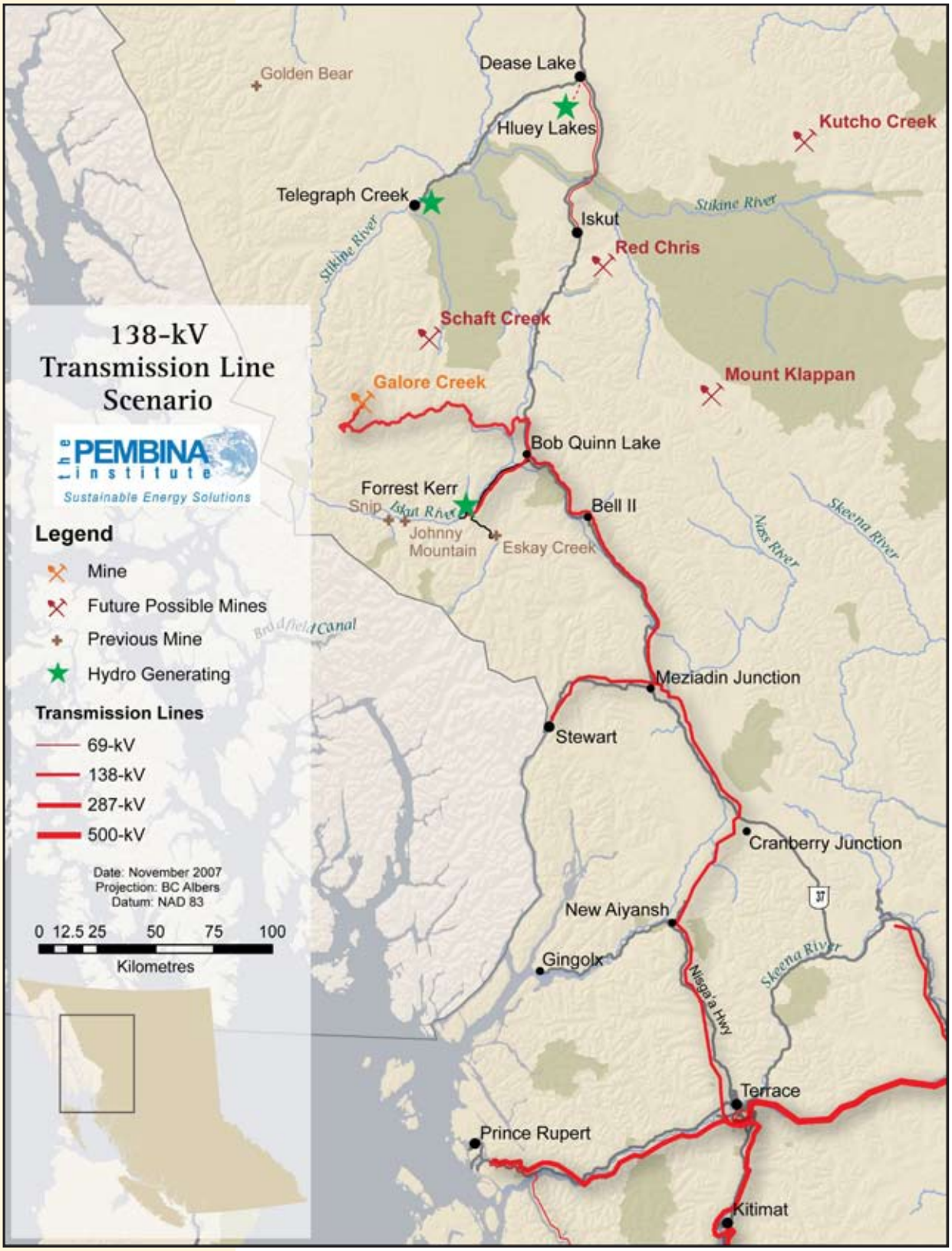

Figure 3
138-kV Transmission Line Scenario

This map shows the 138-kV transmission line as originally proposed. It also shows a low-voltage line between Dease Lake and Iskut, a possibility which was not part of the original 138-kV line proposal.

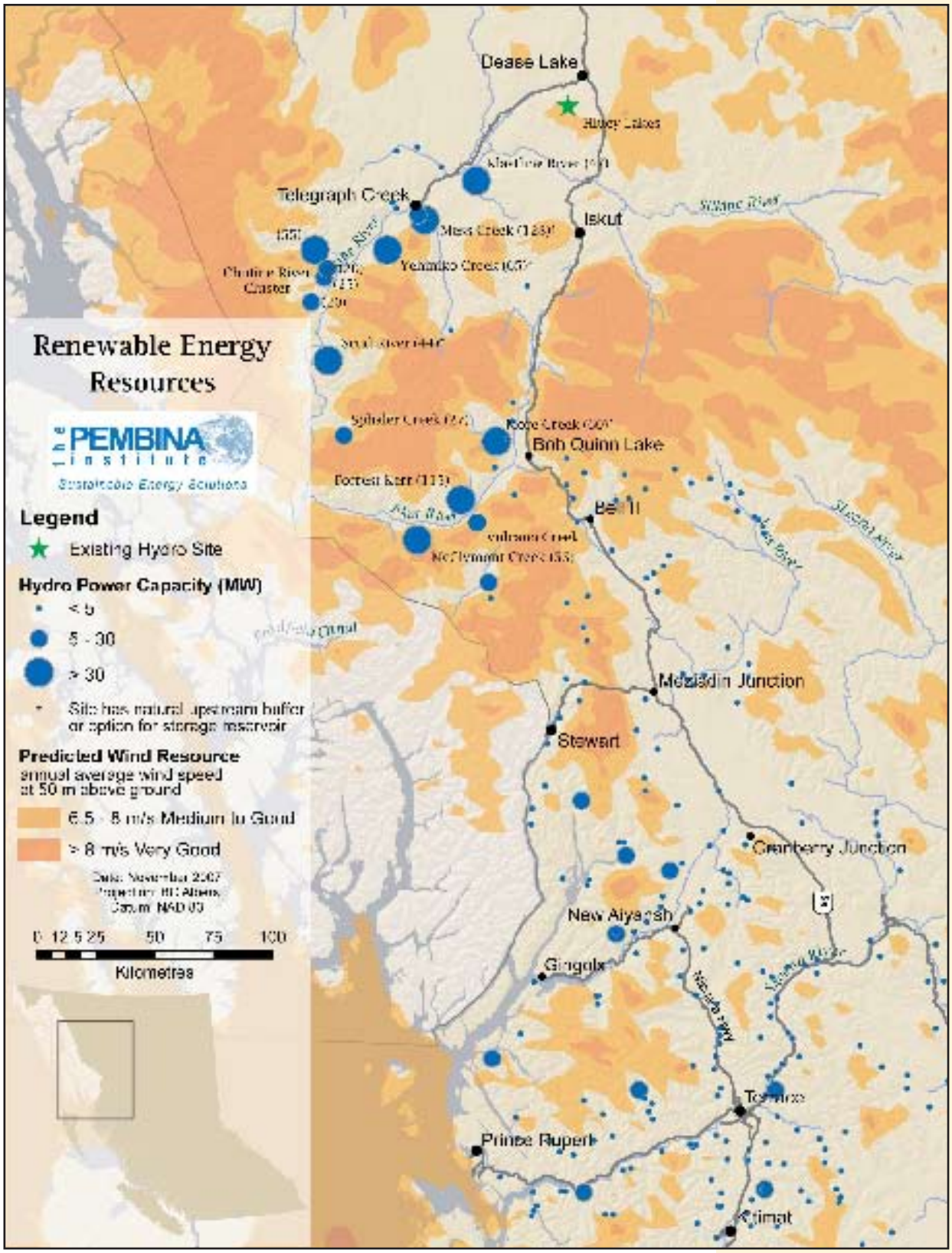

Figure 4
Renewable Energy Resources

This map shows the wind and small hydro renewable energy resources of the region. There are fairly significant medium to very good wind resources in the region and numerous opportunities to develop small hydro power projects.

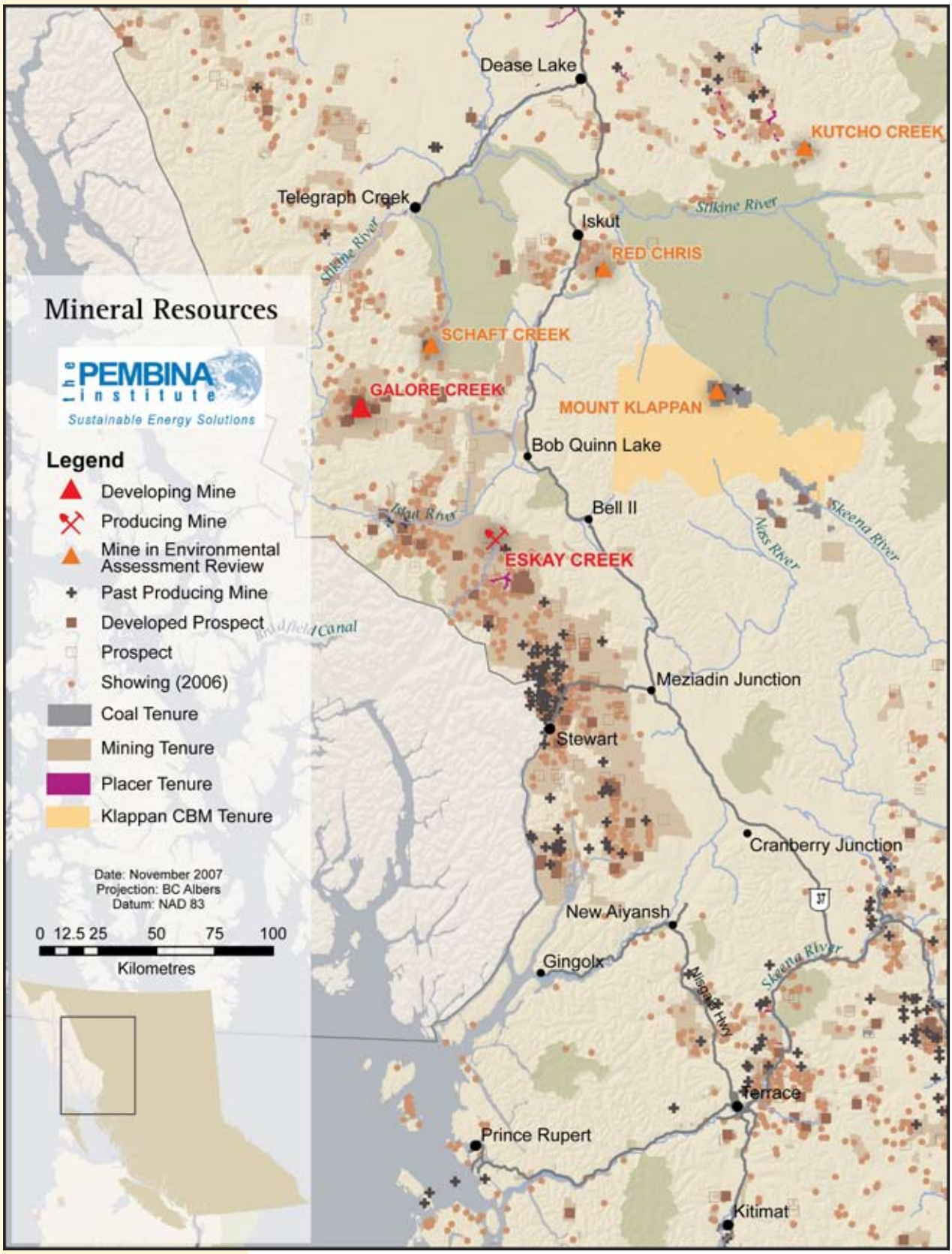

Figure 5
Mineral Resources

This map shows the mineral resources of the region including the past producing mines from the southern regions and the potential mines in the north. The map underlines both the potential for mining and the need to plan now to manage the social, economic and environmental effects before a mining boom is fully underway.